

Date: Sat, 11 Dec 93 04:30:26 PST  
From: Ham-Digital Mailing List and Newsgroup <ham-digital@ucsd.edu>  
Errors-To: Ham-Digital-Errors@UCSD.Edu  
Reply-To: Ham-Digital@UCSD.Edu  
Precedence: Bulk  
Subject: Ham-Digital Digest V93 #143  
To: Ham-Digital

Ham-Digital Digest                      Sat, 11 Dec 93                      Volume 93 : Issue 143

Today's Topics:

                    1933 vs. 1935 HDLC  
            9k6 baud packet - is there any point?  
            COMPLETE Documented NOS Wanted  
            Digital Cellular  
            HP48 Communications (2 msgs)  
    Need advice on using tube-final rigs for RTTY/AFSK  
            NETMGR a tool for R.O.S.E.  
            Scrambler lockup  
            W9GR DSP article of Sept 1992 QST  
            X1J at 38.4 kbps

Send Replies or notes for publication to: <Ham-Digital@UCSD.Edu>  
Send subscription requests to: <Ham-Digital-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Digital Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-digital".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: Thu, 9 Dec 1993 05:35:17 GMT  
From: news.Hawaii.Edu!tony@ames.arpa  
Subject: 1933 vs. 1935 HDLC  
To: ham-digital@ucsd.edu

What is the difference between a WD 1933 and a WD 1935? I notice that the  
manual/schematic for some TNC-1 clones show a 1933 but when you pop the thing  
open there's a 1935 in there.

--

Antonio Querubin  
tony@mpg.phys.hawaii.edu / ah6bw@uhm.ampr.org / querubin@uhunix.bitnet

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Date: 10 Dec 1993 11:10:25 -0600

From: mvb.saic.com!unogate!news.service.uci.edu!usc!howland.reston.ans.net!gatech!  
concert!corpgate!crchh327.bnr.ca!debaker@network.ucsd.edu

Subject: 9k6 baud packet - is there any point?

To: ham-digital@ucsd.edu

In article <755446538snx@llondel.demon.co.uk>, dave@llondel.demon.co.uk (David Hough) writes:

|> In article <FROUD.93Dec8202731@sunlab41.sx.ac.uk> froud@sunlab41.sx.ac.uk (How much wood could a woodchuck chuck if a woodchuck could chuck wood?) writes:

|> >Just a minor point I wouldn't mind cleared up if anyone has a few seconds...

|> >

|> >I read that rigs had to be modified to allow upwards of 2k4 baud transmission,

|> >but is this pointless if the person you are trying to communicate with

|> >hasn't a repicrocal modification at the either end to allow reception of

|> >higher baud transmissions?

|> >

|> Unlike land-line modems, there is no speed negotiation on packet (unless you

|> are using strange kit) so you have to set up your rig/TNC to work at a

|> particular speed. Once you have tried 9600baud you will think that 1200 is

|> \*very\* slow. It isn't hard to modify rigs either....

^^

OK, now I am ready to get some info on modifying rigs for 9600! I have a kenwood TM-742A that I would like to use...does anyone know where I can find information explaining how to do this?

Also, how do I go about finding a 'full sevice PBBS' (if that is what I am looking for) in order to send long distance packet mail, i.e. to an address of a person in another city or state (or country)??

|>

|> Dave

|> --

|>

|> \*\*\*\*\*

|> \* G4WRW @ GB7WRW.#41.GBR.EU AX25 \* Start at the beginning. Go on \*

|> \* dave@llondel.demon.co.uk Internet \* until the end. Then stop. \*

|> \* g4wrw@g4wrw.ampr.org Amprnet \* (the king to the white rabbit) \*

|> \*\*\*\*\*

Thanks,

73,

-----  
| David E. Baker  
| Callsign: AB5PI

-----  
| Opinions expressed are |  
| mine, and they do not |

| Internet: debaker@bnr.ca                      necessarily reflect        |  
| IP Addr: 47.122.65.7                      the opinions of BNR or        |  
Unix ID: crchh7b0                      or Northern Telecom.

-----  
Date: Wed, 8 Dec 1993 18:32:12 GMT  
From: nih-csl!helix.nih.gov!mack@uunet.uu.net  
Subject: COMPLETE Documented NOS Wanted  
To: ham-digital@ucsd.edu

In article <9312012304.tn22729@aol.com> <mattharvey@aol.com> writes:  
>I would like to know how I could attain a copy of the latest version of KA9Q  
>unmodified NOS. I would appreciate it if I could find a package with complete  
>documentation that includes the file BM.EXE. Please send responses to  
>MattHarvey@aol.com OR KD4AZH@KB4GBS.#TPA.FL.US.NOAM.  
>

>Thank you.  
Do you know about the book from tthe ARRL (forget what it's called -  
something like NOSGUIDE). Unfortunately it's pitched at a very  
low level.

Joe NA3T  
mack@ncifcrf.gov

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Date: Wed, 08 Dec 93 12:49:04 MST  
From: pacbell.com!sgiblab!swrinde!cs.utexas.edu!asuvax!ennews!stat!aznet!  
dan@network.ucsd.edu  
Subject: Digital Cellular  
To: ham-digital@ucsd.edu

We are currently running Digital in our system, but it is still undergoing  
testing and is not accessible by the public just yet. We are testing the  
format of CDMA.

Dan

-----  
dan@aznet.stat.com  
Daniel J. Meredith  
Fax - (602) 956-2566  
Voice - (602) 809-0555  
-----

Date: 10 Dec 1993 08:39:06 -0600

From: mvb.saic.com!unogate!news.service.uci.edu!usc!cs.utexas.edu!swrinde!gatech!  
news-feed-1.peachnet.edu!concert!corpgate!crchh327.bnr.ca!kharker@network.ucsd.edu

Subject: HP48 Communications

To: ham-digital@ucsd.edu

In article <jann0004-091293230819@dialup-1-75.gw.umn.edu>,  
jann0004@maroon.tc.umn.edu (Scott Jann) writes:

|> I am looking for a cheap way to communicate between two HP-48 calculators  
|> (longer than the build in IR can do), maybe 50-100 feet. I have heard of  
|> people modifying walkie-talkies to use with the hp48. I don't want to use  
|> TNC equipment....too expensive for me.  
|> How would I go about modifying a walkie-talkie to do digital  
|> communications? I don't care about error checking or anything, just a way  
|> to send simple ascii messages.  
|> Can anyone help me with doing this?  
|>  
|> Thanks

As another idea, I have seen infrared "repeaters" little red pyramid-shaped things that relay the signals of tv remotes and whatnot. Perhaps a strategically placed one (if you're going to be using the calculators basically in the same area all the time) would do the trick. Don't know where you'd go to find one of these things. Probably saw it in a Damark catalog or someplace like that.

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=====
Kenneth E. Harker          BNR          "Any opinions expressed
kharker@bnr.ca            Richardson, Texas, USA    are solely mine and do
N1PVB                     (214) 684-5115    not represent BNR"
=====
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Date: Fri, 10 Dec 1993 05:12:47 GMT

From: pacbell.com!sgiblab!swrinde!cs.utexas.edu!howland.reston.ans.net!gatech!  
news-feed-1.peachnet.edu!umn.edu!dialup-1-75.gw.umn.edu!user@network.ucsd.edu

Subject: HP48 Communications

To: ham-digital@ucsd.edu

I am looking for a cheap way to communicate between two HP-48 calculators (longer than the build in IR can do), maybe 50-100 feet. I have heard of people modifying walkie-talkies to use with the hp48. I don't want to use TNC equipment....too expensive for me.

How would I go about modifying a walkie-talkie to do digital communications? I don't care about error checking or anything, just a way to send simple ascii messages.

Can anyone help me with doing this?

Thanks

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Date: Thu, 9 Dec 1993 16:50:30 GMT  
From: pravda.sdsc.edu!usc!howland.reston.ans.net!europa.eng.gtefsd.com!emory!  
rsiatl!ke4zv!gary@network.ucsd.edu  
Subject: Need advice on using tube-final rigs for RTTY/AFSK  
To: ham-digital@ucsd.edu

In article <CHqHJ9.Awz@srngenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:  
>Patric M Stickler (stickler@klaava.Helsinki.FI) wrote:

>: How can one

>: estimate the max. drive the finals can take at 100% duty cycle?

>

>If the rig has an AM mode, use the AM carrier power rating.

Good.

>Even better, mount a 3 or 5-inch muffin fan on the side of the cabinet  
>blowing directly on the final amplifier tubes. With that, you should  
>be able to run full CW power on digital modes. The main limitation then  
>will be the power transformer -- As long as you keep the transmit time  
>below 50% (at least 50% listening time), you should be OK.

Not so good. The limitation isn't usually raw envelope temperature, it's  
the temperature of the plate structure and the seals at the connections.  
With sweep tubes, you can't cool them effectively enough with a muffin fan  
to get even 50% power, much less 100% power when key down time exceeds a  
few seconds. The plate structures aren't up to it, and you need to get  
airflow across the base seals, and they're masked by the tube socket.  
Real transmitting tubes are better because their plate structures are  
heavier, but you still have seal problems unless you have air sockets.  
Best, of course, are external anode tubes mounted in proper air sockets  
with proper chimneys.

Low duty cycles are good, but you still have to watch absolute key  
down times. If the key down time exceeds the thermal inertia of the  
tube, you've got to treat it like it's 100% duty cycle use.

Gary

--

Gary Coffman KE4ZV	I kill you,	gatech!wa4mei!ke4zv!gary
Destructive Testing Systems	You kill me,	uunet!rsiatl!ke4zv!gary
534 Shannon Way	We're the Manson Family	emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244	-sorry Barney	

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Date: 7 Dec 1993 22:45:42 -0500  
From: kb2ear.ampr.org!not-for-mail@princeton.edu  
Subject: NETMGR a tool for R.O.S.E.  
To: ham-digital@ucsd.edu

Bill Slack NX2P asked me to post this.

NETMGR is a Windows based ROSE network managment took. It allows the ROSE network manager or switchOP to graphically draw the network (or part of the network) and automatically generate the configuration files. In most cases no manual editing of the configuration files will be neccessary.

If you would like a copy and don't have FTP please send me email and I send a copy via email. Or I'll post somewhere on USENET.

What FTP sites should I post this on?

If you would like more info about ROSE send email to askrat@kb2ear.ampr.org and/or get on the ROSE mailing list. To get on the mailing list send email to listserv@kb2ear.ampr.org with this line as the body:

ADD rose

or

ADD <Your\_Address> rose

To post to the list send email to rose@kb2ear.ampr.org.

73,

--

Scott R. Weis KB2EAR  
Internet: kb2ear@kb2ear.ampr.org  
Snail Mail: 10 Palmer Rd., Kendall Park, NJ, 08824-1228  
Phone: +1 908 297 0469

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Date: 11 Dec 93 05:55:25 GMT  
From: news-mail-gateway@ucsd.edu  
Subject: Scrambler lockup  
To: ham-digital@ucsd.edu

Here in Utah, we have designed and run some test on a T1 radio modem.

The modem appears to work very well but there is an area of slight concern: This modem uses a 17 bit maximal-length scrambler (taps on bits 5 and 17).

This scrambler uses the same circuit topography as the scrambler in the GRAPES modem and uses 2 XOR gates (74HC86) 2 shift registers (2 74HC164's) and a flip-flop (1/2 of a 74HC74).

The problem seems to be that there some unusual circumstances (cause unknown) in which the scrambler seems to get "stuck". Since this sequence generator is ostensibly an open loop system (as opposed to a PN generator used for Spread Spectrum) I don't see how this should be able to occur, but occur it can.

Has anyone else had experience with this sort of scrambler and had to deal with this problem?

Several things come to mind: One could detect the lack of appropriate transitions and reset the system to get it working once again. One could also have the system software detect a stoppage of the data and cause a reset to be issued.

Interestingly enough, the descrambler, which is nearly identical to the scrambler, does NOT seem to exhibit this sort of behavior.

We will soon be using these modems in a full-duplex T1 microwave link and will report on their performance.

<Clint>

ka7oei@uugate.wa7slg.ampr.org  
clint@uugate.aim.utah.edu

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Date: Wed, 8 Dec 1993 19:53:03 GMT  
From: mel.dit.csiro.au!its.csiro.au!dmssyd.syd.dms.CSIRO.AU!metro!  
basser.cs.su.oz.au!harbinger.cc.monash.edu.au!yeshua.marcam.com!  
zip.eecs.umich.edu!umn.edu!news-feed-2.0@munnnari.oz.au  
Subject: W9GR DSP article of Sept 1992 QST  
To: ham-digital@ucsd.edu

In article <1993Dec7.184551.24853@kpc.com>, nat@kpc.com (Natarajan Gurumoorthy) writes:

|> Hi,  
|> I just stumbled across W9GR's article and am itching to build it.  
|> I have several questions:

|> 2. The article mentions that the TI assembly files for the prom code  
|> are available on compuserve. Are they also available at some internet ftp site.  
|> Any pointers would be helpful.  
|> 3. The article also mentions that the prom programming files are  
|> also available. Again pointers would be helpful.  
|>

I found these files via anonymous ftp at nic.funet.fi. Get into  
the machine and cd to directory /pub/ham/dsp/w9gr. The name of the file is  
w9gr.zip. The file contains the prom programming files as well as the  
assembly sources for the lms and 3 CW filters. I located the files through  
the archie server at UNL Nebraska.

Enjoy  
Nat.

--

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Natarajan Gurumoorthy AB6SJ Kubota Pacific Computer, Inc.  
nat@kpc.com 2630 Walsh Avenue  
Phone 408 987 3341 Santa Clara, California 95051.  
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Date: 10 Dec 93 20:55:42 GMT  
From: ogicse!cs.uoregon.edu!sgiblab!sdd.hp.com!col.hp.com!srngenprp!  
glenne@network.ucsd.edu  
Subject: X1J at 38.4 kbps  
To: ham-digital@ucsd.edu

Since posting the basenote, I've had some very helpful and useful  
exchanges with Dave Roberts, the author of X1J. In addition, the remote  
site I mentioned has been visited and the TNC running X1J was replaced  
with another which has a DCD state machine. Also, several days after  
vanishing from the band, the remote X1J started functioning, poorly but  
still working, again.

In considering the differences between the remote X1J and one in the  
hamshack (allright, it's really the garage) I came to the idea that  
maybe what was happening wasn't due to the fundamental inability of X1J  
to run fast enough. Dave's comments substantiated this.

Due to the difference of DCD signals, the remote node had been running  
full duplex. This required limiting MAXFRAME to one but that was  
tolerable. I had set the node to FDX in order to ignore the RF derived  
DCD coming from the radio which in this case can tend to have a lot of  
edges due to Part 15 and other devices sharing 902-928 MHz. However,  
the radios are also designed such that RxD is qualified by DCD, even if  
the TNC ignores DCD, RxD doesn't. With a loosely set squelch and/or lots  
of fast FH spread spectrum signals there can be a \*lot\* of edges. With



a loose squelch the RxD line is a gated version of what the discriminator sees (which is very noisy with a lot of fast edges in the 500 KHz bandwidth).

I now suspect that the radio squelch was set loose and the radio could probably hear itself weakly (noisy) during transmit. The problem I saw was likely the result of a tremendous number of interrupts from the receive side of the TNC SIO (probably mostly receive aborts or errors of some kind). I expect that the receive interrupts have higher priority than transmit interrupts and consequently the transmit side was able to run out of data to send and reported underruns.

Since replacing the TNC and disabling FDX the excessive number of underruns disappeared and performance has returned to the same level as that of the local X1J boxes. The X1J code does require considerable overhead so performance isn't stellar, but it *\*does\** seem to run now at 38.4 kbps. Ping RTT is about 300 milliseconds. This is way longer than the raw channel rate alone requires but it *\*does\** still allow higher speed data to go through the node and offers remote diagnostics.

Following Dave's advice, I've disabled mheard and nodes broadcasts and will use minqual to effectively disable NET/ROM operation.

So, for anyone else wanting faster operation and KISS in a standalone box for lowcost, X1J still seems viable to 38.4 kbps. I still hope to get a version of K3MC KISS code modified to include digipeating since I think this might be able to run my radios much faster, perhaps in the 100-200 kbps territory. If this happens before the fullspeed controllers are working properly I'll probably try to get that code installed in the TNCs.

All this is certainly trying to squeeze an underpowered platform, the TNC2, but it is still a lot less expensive than the few alternatives, Gracilis, the German TNC3 and perhaps the Data Engine and presently it is more available than MIO. I think that it points to a general issue though; as we seek higher speeds we will continue to need to handle as much of the "pre-filtering" in hardware as possible. Building radio hardware which has data which is as "qualified" as possible, along with doing FEC in hardware rather than software may be requirements as we push for performance. Picking radio methods (like SS or equalization) combined with fast hardware FEC to provide "host ready" data may be a necessary.

The TNC was originally designed as an interface between a "dumb radio" and a dumb terminal. As we've increasingly run higher levels of complexity, TCP/IP and other networking protocols, we've drifted toward "doing the hard part in the increasingly powerful local host. KISS protocol is an example of this. However, as we turn the speed up, I

think many functions like "data cleaning" and FEC if not some of the higher ones like switching/routing may have to be done closer to the physical medium again.

Glenn Elmore n6gn

ax.25 n6gn@wx3k.#nocal.ca.usa.na  
amateur IP: glenn@SantaRosa.ampr.org  
Internet: glenne@sr.hp.com

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End of Ham-Digital Digest V93 #143

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